

CLAIMS

What is claimed is:

- 5 administering a therapeutically effective amount of a positron-emitting compound to the subject, wherein the positron emitting compound comprises one or more atoms of fluorine-18, carbon-11, nitrogen-13, or oxygen-15.
- 10 2. The method of claim 1, wherein the positron-emitting compound comprises one or more fluorine-18 atoms.
- 15 3. The method of claim 2, wherein the positron-emitting compound is  $^{18}\text{F}$ -fluorodeoxyglucose.
4. The method of claim 3, wherein the  $^{18}\text{F}$ -fluorodeoxyglucose is  $^{18}\text{F}$ -2-fluoro-2-deoxyglucose.
- 20 5. The method of claim 2, wherein the positron-emitting compound is  $^{18}\text{F}$ -fluorocholine.
6. The method of claim 1, wherein the positron-emitting compound is [methyl- $^{11}\text{C}$ ] choline.
- 25 7. The method of claim 1, wherein the positron-emitting compound is administered to the subject in a dosage at least about 1.5 times that used for diagnostic purposes.

8. The method of claim 7, wherein the positron-emitting compound is administered to the subject in a dosage at least about twice that used for diagnostic purposes.

5           9. The method of claim 1, wherein the positron-emitting compound is administered to the subject in a dosage of about 30 to 100 mCi per 50 kg of body weight.

10           10. The method of claim 1, wherein the positron-emitting compound is administered to the subject in a dosage of about 30 mCi per 50 kg of body weight.

15           11. The method of claim 1, wherein the positron-emitting compound is administered to the subject in a dosage of about 50 mCi per 50 kg of body weight.

20           12. The method of claim 1, wherein the positron-emitting compound is administered to the subject in a dosage of about 100 mCi per 50 kg of body weight.

25           13. The method of claim 1, further comprising administering any one of or any combination of immunotherapy, surgery, or other chemotherapy or radiation therapy to the subject at any stage in the treatment of the subject.

            14. The method of claim 1, wherein the positron-emitting compound is administered intravenously.

            15. The method of claim 1, wherein the positron-emitting compound is administered in one or two doses per day over five to ten days during a two-week to three-week period.

16. The method of claim 4, wherein the positron-emitting compound is administered in one or two doses per day over five to ten days during a two-week to three-week period.

5           17. The method of claim 15, wherein the doses are administered on five to ten consecutive days.

18. The method of claim 15, wherein the doses are administered on non-consecutive days.

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19. The method of claim 1, wherein the disease is cancer.

20. The method of claim 19, wherein the cancer is bone cancer.